

## **REMARKS**

Applicants hereby affirm the provisional election of the claims of Group I (claims 1 and 2) made during a telephonic conversation between the Examiner and Paul Greeley on January 14, 2004. The election was made without traverse.

Claims 1 to 4 are in this application. Claims 3 and 4, which had been withdrawn from consideration as being drawn to a non-elected invention, are hereby canceled. Claims 1 and 2 are currently pending in this application.

Claims 1 and 2 have been amended. Applicants have amended claims 1 and 2 to clarify certain stylistic aspects of the claims.

1. Claims 1 and 2 have been rejected under 35 U.S.C. § 102(b), as being anticipated by U.S. Patent No. 5,700,596 to Ikoma et al. (here after Ikoma et al.) or by JP 10-316431 to Matsubara et al. (here after Matsubara et al.).

### **Ikoma et al.**

The Office Action states that Ikoma et al. teach the composition and making of nickel hydroxides with improved tap densities containing 1-7 wt % of at least one of cadmium, calcium, zinc, magnesium, iron, cobalt and manganese (Col. 3, lines 1-10). The Office Action further states that the tap density of a "typical example" of the mixed hydroxide composition according to the Ikoma et al. was 2.01 g/cm<sup>3</sup> referring to Col. 5, lines 1-10 and Table 1.

The nickel hydroxide powder described in Example 1 of Ikoma et al., as shown in Col. 5, lines 1-10 and Table 1, does not have manganese. In contrast, the composition described in instant claim 1 requires manganese. Claim 1 describes "A high density cobalt-manganese coprecipitated nickel hydroxide with a tapping density of 1.5 g/cc or

greater." Thus, all three elements, i.e., cobalt, nickel and manganese, are required to be present in the composition.

The Example 1, Table 1, shows a composition having tap density of 2.01 g/cm<sup>3</sup> having only cobalt and nickel. It does not have manganese. Thus, because the cobalt and nickel hydroxide powder described in Example 1 of Ikoma et al. does not have manganese, it does not anticipate the composition of claim 1.

Accordingly, the rejection of claims 1 and 2 under 35 U.S.C. § 102(b), as being anticipated by Ikoma et al. should be withdrawn and claims 1 and 2 should be allowed.

**Matsubara et al.**

Matsubara et al. teaches a composition that is entirely different from the compositions claimed in claims 1 and 2. The differences include the following:

Matsubara et al. does not teach a composition having a "high density cobalt-manganese coprecipitated nickel hydroxide" with "a tapping density of 1.5 g/cc or greater," claimed in claim 1. Nowhere does Matsubara et al. state that the compositions described therein have "a tapping density of 1.5 g/cc or greater."

The composition described by Matsubara et al. is not a "high density cobalt-manganese coprecipitated nickel hydroxide" but is a composition represented by Formula II (see below), which is an entirely different composition than that described in claim 1. The composition described in claim 1 is a "high density cobalt-manganese coprecipitated nickel hydroxide," which does not have either the "anion A<sub>n-z</sub>" or the "mH<sub>2</sub>O" required by Formula II.

Matsubara et al. teaches a composition represented by the following formula:



In contrast, the composition claimed in claim 2 is represented by the following formula:



wherein Co is  $\text{Co}^{2+}$  rather than a mixture of  $\text{Co}^{2+}$  and  $\text{Co}^{3+}$

wherein Mn is  $\text{Mn}^{2+}$  rather than  $\text{Mn}^{3+}$

wherein the stoichiometry of the hydroxy group is  $(\text{OH})_2$  rather than as  $(\text{OH})_{2-nz}$

wherein the composition does not have the anion  $\text{A}_{n-z}$  and

wherein the composition does not have  $m\text{H}_2\text{O}$ .

Therefore, the composition described by Matsubara et al. **does not inherently possess** "a tapping density of 1.5 g/cc or greater" as claimed in claim 1 or 2, because it is a different composition.

Thus, the composition described by Matsubara et al. is entirely different from the composition claimed in claims 1 and 2. Therefore, Matsubara et al. does not anticipate the compositions of claims 1 and 2.

Accordingly, the rejection of claims 1 and 2 under 35 U.S.C. § 102(b), as being anticipated by Matsubara et al. should also be withdrawn and claims 1 and 2 should be allowed.

2. Claims 1 and 2 have been rejected under 35 U.S.C. § 103(a), as being unpatentable over Ikoma et al. (U.S. Patent No. 5,700,596) in view of Kimura et al. (JP 10-081521).

First, the Office Action concedes the following:

"Ikoma et al differ from the applicants in that an exclusive composition of Ni-Co-Mn hydroxides was not disclosed."

The Office Action further states:

"Kimura et al teach the Mn-Co based double hydroxides of Ni as Li-secondary cell anode material, a-whits preparation by the alkaline hydrolysis of metal salts in aqueous solution (Abstract)."

Then, the Office Action concludes, incorrectly, in our view, that:

"It would have been obvious for one of ordinary skill in the art to modify the composition of Ikoma et al by selecting Co and Mn with Ni as preferred elements in the composition per the teachings of Kimura et al by choice of design to benefit from high density and high capacity electrode materials, because both the teachings by Ikoma and Kimura are in the analogous art of electrode materials wherein Kimura teaches the benefits of the Ni-Co-Mn-hydroxide composite, and with the expectation of reasonable success in obviously arriving at the limitations of the instant claims by the applicants."

First, Kimura et al. **does not teach** a Mn-Co based double hydroxides of Ni, as alleged by the Office Action. Kimura et al. **teach** only a Ni-Mn based double hydroxides (see abstract and examples from page 3, last three lines over to the end page 4 of Kimura et al.) prepared from  $\text{NiSO}_4$  and  $\text{MnSO}_4$  alone, **without any Co being used** anywhere in the experimental procedures.

Further, the Abstract clearly states in the sub-heading entitled "SOLUTION" that aging the precipitate obtained by precipitating nickel hydroxide and manganese hydroxide to "provide the objective manganese-cobalt based double hydroxide" that is used in the art. Thus, the precipitated nickel hydroxide and manganese hydroxide material can replace the "manganese-cobalt based double hydroxide" that is used in the art. A "Mn-Co based double hydroxides of Ni" is **not mentioned anywhere** in Kimura et al.

Thus, neither Ikoma et al., which teaches a composition having only cobalt and nickel, but not manganese, nor Kimura et al., which teaches a composition having only manganese and nickel, but not cobalt, teaches or suggests the instantly claimed composition, which has all three elements, i.e., cobalt, nickel and manganese.

The Office Action still further states:

"It would have been obvious for one of ordinary skill in the art to modify the composition of Matsubara et al with the teachings of Kimura et al by selecting Mn as preferred dopant element by choice of design to benefit from high density and high capacity electrode materials, because both the teachings by Kimura and Matsubara are in the analogous art of electrode materials, wherein Kimura teaches the benefits of incorporating Mn into Ni-Co-hydroxide forming Ni-Co-Mn-hydroxide composite, and/or vary the tap density of the resultant Ni-Co-Mn-Hydroxide composite per the teachings of Ikoma et al to benefit from high discharge capacities of the electrode material due to increased loading and stability of the Ni-Co-Mn-hydroxides, because all the teachings are in the analogous art of electrode materials and with the expectation of reasonable success in obviously arriving at the limitations of the instant claims by the applicants."

The Office Action alleges that it would have been obvious for one of ordinary skill in the art to modify the composition of Matsubara et al with the teachings of Kimura et al., without pointing out where such a suggestion is present in at least one of the cited references to modify the other. Contrary to the what is alleged in the Office Action, there is no teaching in either Ikoma et al. or Kimura et al. to modify the other reference by **suggesting to supplying the missing element in order to obtain a product, which neither reference intended to produce**, namely a composition having all three elements, i.e., cobalt, nickel and manganese, which are required to be present in the instantly claimed composition.

Applicants respectfully point out that to properly combine two or more references, there must be a teaching or a suggestion in the references to combine. Without such a teaching or a suggestion, a person of ordinary skill in the art would not be motivated to combine the above references.

A showing of motivation is one of the essential requirements that must be met to establish a *prima facie* case of obviousness (see MPEP § 2142 and *In re Rouffet*, 47 USPQ 2d at 1457-1458). Absent such a teaching or suggestion, the references cited above are not properly combinable because a person of ordinary skill in the art would not be motivated to combine them. Without such a motivation, a person of ordinary skill in the art would not be able to arrive at the claimed invention except through either extensive experimentation or hindsight.

None of the cited references teaches, suggests or provides motivation to a person of ordinary skill in the art to select various elements from a large number of references and combine them in a manner that provides a reasonable expectation of success in producing a product according to the present invention. In addition, none of the cited references teach or suggest the **desirability of producing a product**, namely a composition having **all three elements**, i.e., cobalt, nickel and manganese, which are required to be present in the instantly claimed composition.

Nowhere in the cited references, either taken alone, or taken in combination, is it stated that **producing a product that has all three elements, i.e., Ni, Co and Mn, was either intended or, at least, was desirable** (see MPEP 2143.01). Ikoma et al. teaches a composition having only cobalt and nickel, but not manganese. Kimura et al. teaches a composition having only manganese and nickel, but not cobalt. A mere statement in the Office Action that Ikoma et al. in view of Kimura et al. is sufficient to provide **a teaching or suggestion** for the instantly claimed composition, which has cobalt, nickel and manganese, does not render the present claims obvious because "chemical arts" are considered to be unpredictable arts.

A person of ordinary skill in the art could not predict the properties of a new material obtained by removing one metal from a first material and replacing it with a different metal from a second material because chemical arts are unpredictable arts. In an unpredictable art, such as, the chemical arts, a mere presence of a composition containing **cobalt and nickel** in one reference and a composition containing

manganese and nickel in another reference does not teach or suggest a composition containing cobalt, nickel and manganese. Thus, selecting one or metals from one composition and combining with one or more metals from another composition is not a "choice of design" but rather, is being inventive.

Accordingly, the following quote in the Office Action is incorrect and, as such, does not provide a proper basis to establish a *prima facie* case of obviousness:

"It would have been obvious for one of ordinary skill in the art to modify the composition of Ikoma et al by selecting Co and Mn with Ni as preferred elements in the composition per the teachings of Kimura et al by choice of design to benefit from high density and high capacity electrode materials, because both the teachings by Ikoma and Kimura are in the analogous art of electrode materials wherein Kimura teaches the benefits of the Ni-Co-Mn-hydroxide composite, and with the expectation of reasonable success in obviously arriving at the limitations of the instant claims by the applicants."

The combination of the cited references (1) does not teach or suggest a single composition as defined by the instant claims, (2) does not provide motivation to modify the other reference to arrive at the claimed invention and (3) does not provide a reasonable expectation of success to arrive at instantly claimed invention even if the references were combined.

Thus, in the absence of a teaching, a suggestion, a motivation, a reasonable expectation of success in producing a composition containing cobalt, nickel and manganese or desirability of producing such a composition, the cited references alone or in combination do not render the claims of the instant invention obvious. Therefore, the 35 U.S.C. 103 (a) rejection should be withdrawn and claims 1 and 2 should be allowed.

3. Claims 1 and 2 have been rejected under 35 U.S.C. § 103(a), as being unpatentable over Matsubara et al. (JP 10-316431) in view of Kimura et al. (JP 10-081521) or Ikoma et al. (U.S. Patent No. 5,700,596).

**Matsubara et al. in view of Kimura et al.**

The rejection of claims 1 and 2 under 35 U.S.C. § 103(a), as being unpatentable over Matsubara et al. in view of Kimura et al. in the Office Action is stated as follows:

"Matsubara et al differ from the applicants in that the exclusive composition of Ni-Co-Mn-hydroxides or the tap densities of the mixed hydroxides were disclosed. However, Matsubara claims these mixed hydroxides to be high bulk/tap density materials.

Kimura et al teach the Mn-Co based double hydroxides of Ni as Li-secondary cell anode material, and its preparation of fine particles of the mixed hydroxides by the alkaline hydrolysis of metal salts in aqueous solution (Abstract)."

Applicants believe that the first paragraph quoted contains a critical error. Applicants believe that this paragraph should read as follows (the correction is highlighted and underlined):

"Matsubara et al differ from the applicants in that the exclusive composition of Ni-Co-Mn-hydroxides or the tap densities of the mixed hydroxides were not disclosed. However, Matsubara claims these mixed hydroxides to be high bulk/tap density materials."

Thus, the Office Action would concede that Matsubara et al. teaches a composition that is entirely different from the compositions claimed in claims 1 and 2. As discussed earlier herein, the differences include the following:

Matsubara et al. does not teach a composition having a "high density cobalt-manganese coprecipitated nickel hydroxide" with "a tapping density of 1.5 g/cc or greater," claimed in claim 1. Nowhere does Matsubara et al. state that the compositions described therein have "a tapping density of 1.5 g/cc or greater." The composition described by Matsubara et al. is not a "high density cobalt-manganese coprecipitated nickel hydroxide" but is a composition represented by Formula II (see below), which is an entirely different composition than that described in claim 1. The composition



described in claim 1 is a "high density cobalt-manganese coprecipitated nickel hydroxide," which does not have either the "anion  $A_{n-z}$ " or the " $mH_2O$ " required by Formula II.

Matsubara et al. teaches a composition represented by the following formula:



In contrast, the composition claimed in claim 2 is represented by the following formula:



wherein Co is  $Co^{2+}$  rather than a mixture of  $Co^{2+}$  and  $Co^{3+}$

wherein Mn is  $Mn^{2+}$  rather than  $Mn^{3+}$

wherein the stoichiometry of the hydroxy group is  $(OH)_2$  rather than as  $(OH)_{2-nz}$

wherein the composition does not have the anion  $A_{n-z}$  and

wherein the composition does not have  $mH_2O$ .

Therefore, the composition described by Matsubara et al. **does not inherently possess** "a tapping density of 1.5 g/cc or greater" as claimed in claim 1 or 2, because it is a different composition.

Furthermore, Matsubara et al. **does not suggest** anywhere that a "high density cobalt-manganese coprecipitated nickel hydroxide," which does not have either the "anion  $A_{n-z}$ " or the " $mH_2O$ " would have "a tapping density of 1.5 g/cc or greater." Because the compositions described by Matsubara et al., such as those represented by Formula II, are different than the instantly claimed compositions, the statement in the Office Action that "Matsubara claims these mixed hydroxides to be high bulk/tap density materials" is not correct.

Kimura et al. **does not teach** a Mn-Co based double hydroxides of Ni, as alleged by the Office Action. Kimura et al. **teach** only a Ni-Mn based double hydroxides (see abstract and examples from page 3, last three lines over to the end page 4 of Kimura et al.) prepared from NiSO<sub>4</sub> and MnSO<sub>4</sub> alone, **without any Co being used** anywhere in the experimental procedures.

Further, the Abstract clearly states in the sub-heading entitled "SOLUTION" that aging the precipitate obtained by precipitating nickel hydroxide and manganese hydroxide to "provide the objective manganese-cobalt based double hydroxide" that is used in the art. Thus, the precipitated nickel hydroxide and manganese hydroxide material can replace the "manganese-cobalt based double hydroxide" that is used in the art. A "Mn-Co based double hydroxides of Ni" is **not mentioned anywhere** in Kimura et al.

Thus, Matsubara et al. teaches a composition represented by Formula II:



whereas Kimura et al. teaches a composition having **manganese and nickel, but not cobalt.**

The combination of Matsubara et al. and Kimura et al. does not teach or suggest the instantly claimed compositions because there is no suggestion in Kimura et al. to modify the composition of Matsubara et al., for example, by suggesting to use Co<sup>2+</sup> only instead of a mixture of Co<sup>2+</sup> and Co<sup>3+</sup>; Mn<sup>2+</sup> instead of Mn<sup>3+</sup>; a stoichiometry of 2 for the hydroxy group instead of 2-nz, i.e., (OH)<sub>2</sub> vs. (OH)<sub>2-nz</sub>; removing the anion A<sub>n-z</sub>; and removing mH<sub>2</sub>O from Formula II in order to arrive at the instantly claimed composition, which is represented by the Formula:



Absent such a suggestion to combine, the rejection of claims 1 and 2 under 35 U.S.C. § 103(a), as being unpatentable over Matsubara et al. in view of Kimura et al., should be withdrawn and claims 1 and 2 should be allowed.

**Matsubara et al. in view of Ikoma et al.**

Matsubara et al. teaches a composition represented by Formula II:



The discussion relating to the composition described by Matsubara et al. is set forth herein to show that Matsubara et al. does not disclose or suggest the instantly claimed composition.

The Office Action states:

"Ikoma et al specifically teaches the increasing the tap density of the mixed-composite hydroxides and its benefits as electrode materials."

Ikoma et al. does not teach or suggest increasing the tap density of the mixed-composite hydroxides **according to the present invention**. Ikoma et al. teaches a composition having only cobalt and nickel, but not manganese. Particularly, the nickel hydroxide powder described in Example 1 of Ikoma et al., as shown in Col. 5, lines 1-10 and Table 1, does not have manganese. Indeed, in section 2, third paragraph, of the Office Action, the Office Action states:

"Ikoma et al differ from the applicants in that an exclusive composition of Ni-Co-Mn hydroxides was not disclosed."

The combination of Matsubara et al. and Ikoma et al. does not teach or suggest the instantly claimed composition because there is no suggestion in Ikoma et al. to modify the composition of Matsubara et al., for example, by suggesting to use  $\text{Co}^{2+}$  only

instead of a mixture of  $\text{Co}^{2+}$  and  $\text{Co}^{3+}$ ;  $\text{Mn}^{2+}$  instead of  $\text{Mn}^{3+}$ ; a stoichiometry of 2 for the hydroxy group instead of 2-nz, i.e.,  $(\text{OH})_2$  Vs  $(\text{OH})_{2-\text{nz}}$ ; removing the anion  $\text{A}_{\text{n-z}}$ ; and removing  $\text{mH}_2\text{O}$  from Formula II in order to arrive at the instantly claimed composition, which is represented by the Formula:



Conversely, there is no suggestion in Matsubara et al. to modify the composition disclosed therein, for example, by suggesting to use  $\text{Co}^{2+}$  only instead of a mixture of  $\text{Co}^{2+}$  and  $\text{Co}^{3+}$ ;  $\text{Mn}^{2+}$  instead of  $\text{Mn}^{3+}$ ; a stoichiometry of 2 for the hydroxy group instead of 2-nz, i.e.,  $(\text{OH})_2$  Vs  $(\text{OH})_{2-\text{nz}}$ ; removing the anion  $\text{A}_{\text{n-z}}$ ; and removing  $\text{mH}_2\text{O}$  from Formula II, in order to arrive at the instantly claimed composition, which is represented by the Formula:



Further, there is no suggestion in Matsubara et al. to modify the composition disclosed by Ikoma et al. to furnish the missing Mn, since the nickel hydroxide powder described in Example 1 of Ikoma et al., as shown in Col. 5, lines 1-10 and Table 1, does not have Mn.

Further still, there is no suggestion in Matsubara et al. to modify the composition disclosed by Ikoma et al. to use  $\text{Mn}^{2+}$  instead of  $\text{Mn}^{3+}$ .

Absent these suggestions, the combination of Matsubara et al. and Ikoma et al. does not teach or suggest the instantly claimed composition.

Therefore, the rejection of claims 1 and 2 under 35 U.S.C. § 103(a), as being obvious over Matsubara et al. in view of Ikoma et al., should be withdrawn and claims 1 and 2 should be allowed.

Accordingly, the rejection of claims 1 and 2 under 35 U.S.C. § 103(a), as being obvious over Matsubara et al. in view of Matsubara et al. or Ikoma et al., should be withdrawn and claims 1 and 2 should be allowed.

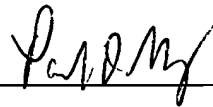
Applicant respectfully requests reconsideration of the present application and allowance of the pending claims.

An early issuance of a Notice of Allowability is earnestly solicited.

Respectfully submitted,

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